

FEDERAL AVIATION ADMINISTRATION AIR TRAFFIC BASICS | Lesson 14: Aircraft Characteristics and Recognition

ALL LESSONS FRAME: 1

## Aircraft Characteristics and Recognition

NEXT



**Without the knowledge of aircraft types and characteristics, our job to efficiently control aircraft would be much more difficult!**

LEARN MORE

Not all aircraft are alike, nor are all aircraft created equal. Being able to differentiate between the various aircraft and their characteristics will make it easier for you to determine their limitations.

For example, you need to know the answers to questions, such as:

- Can these two aircraft pass on the same taxiway?
- Can this aircraft out climb that crossing traffic?
- What type of traffic pattern will this aircraft fly?



## Purpose

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This lesson introduces how different aircraft look, how aircraft perform, and the written and visual identifiers of aircraft.



## Lesson Objectives

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In this lesson, you will:

1. Identify aircraft:
  - Categories
  - Weight classes
  - Designators
  - Performance characteristics
  - Identification features
2. Recognize selected aircraft

You will meet the objectives in accordance with the following references:

- FAA Order JO 7110.65, Air Traffic Control
- ATG-2, Tri-Option Controller Reference Manual





# Aircraft Categories

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## Categories

Aircraft categories are used for providing the same runway separation within the Terminal environment. Categorization of aircraft:

- Provides a method of grouping aircraft
- Allows for immediate distinction

Aircraft are divided into three categories:

- Category I
- Category II
- Category III

JO 7110.65, Chap. 3

<b>Category I (CAT I)</b>	
<b>Category II (CAT II)</b>	
<b>Category III (CAT III)</b>	



# Aircraft Categories

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## CAT I Aircraft

- Weight: 12,500 lbs. or less
- **Single-engine**
- Propeller-driven



All helicopters

## Category 'CAT' I

JO 7110.65, Chap. 3



# Aircraft Categories

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## Category 'CAT' II

JO 7110.65, Chap. 3

### CAT II Aircraft

- Weight: 12,500 lbs. or less
- **Twin-engine**
- Propeller-driven





# Aircraft Categories

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## CAT III Aircraft

Any other aircraft not described in either CAT I or CAT II



## Category 'CAT' III

JO 7110.65, Chap. 3



# Aircraft Categories

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## Restrictions and Limitations

Aircraft performance is affected by various factors. Some of these factors are:

- Weather conditions
- Load
- Engine performance
- Aircraft configuration
- Pilot's ability
- Speed
- Altitude
- Climb rate
- Weight class

*NOTE: Figures provided concerning performance data for each category are approximate. Some aircraft may exceed these performance ranges.*

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# Aircraft Performance Characteristics

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## Category I (CAT I)

Aircraft in Category I are lightweight, single-engine, propeller-driven, weighing 12,500 pounds or less.

**Examples:**

- C172 - Cessna Skyhawk
- BE35 - Beech Bonanza 35
- M20P - Mooney Ranger

JO 7110.65, Chap. 3; ATG-2

## CAT I General Performance Characteristics

- Speed:** 100-160 knots
- Altitude:** 10,000 feet and below
- Climb Rate:** 1,000 feet per minute or less
- Weight Class:** Small (S)



# Aircraft Performance Characteristics

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## CAT II General Performance Characteristics

**Speed:** 160-250 knots  
**Altitude:** FL240 and below  
**Climb Rate:** 1,000-2,000 feet per minute  
**Weight Class:** Small (S)

### Category II (CAT II)

Aircraft in Category II are lightweight, twin-engine, propeller-driven aircraft, weighing 12,500 pounds or less.

#### Examples:

- BE55 - Beech Baron 55
- PA34 - Piper Seneca
- PAY1 - Piper Cheyenne

The aircraft in this category are usually larger than most CAT I aircraft.

JO 7110.65, Chap. 3; ATG-2



## Aircraft Performance Characteristics

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### Category III (CAT III)

Aircraft in Category III represent a wide variety of uses for commercial, business, and military aviation.

CAT III aircraft have a wider operating range because some are powered by reciprocating, turboprop, or turbojet engines.

*NOTE: Category III contains all aircraft not included in Categories I and II. Generally these aircraft will have the above characteristics and may be classified as small, large, or heavy weight class.*

JO 7110.65, Chap. 3; ATG-2

### CAT III General Performance Characteristics

**Speed:** 300-550 knots

**Altitude:** FL450 and below

**Climb Rate:** 2,000-4,000 feet per minute



## Aircraft Performance Characteristics

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### Helicopter's General Performance Characteristics

**Speed:** 90-160 knots  
**Altitude:** FL200 and below  
**Climb Rate:** 500-2,150 feet per minute

### Helicopters

The use of helicopters has expanded greatly; therefore, it is necessary to recognize at least some of their characteristics in the ATC System.

All helicopters are classified as CAT I.

*NOTE: Because the variety of helicopters is so great, only a representative cross-section will be presented in this lesson.*

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# Aircraft Weight Classes

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## Weight Class Definitions

JO 7110.65, App. A

- Small:** Aircraft of 41,000 pounds or less maximum certified takeoff weight.
- Large:** Aircraft of more than 41,000 pounds, maximum certified takeoff weight up to but not including 300,000 pounds.
- Heavy:** Aircraft capable of takeoff weights of 300,000 pounds or more, whether or not they are operating at this weight during a particular phase of flight.



# Aircraft Weight Classes

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## Weight Classes

As the categories of aircraft are used for same runway separation, aircraft weight classes are primarily used for wake turbulence separation.

Order JO 7110.65, Appendix A, contains weight class information pertaining to most fixed-wing aircraft currently in use, as well as type designators, engine number and type, and average climb and descent rates.

*NOTE: Appendix A to Order 7340.1, Contractions Manual, also contains this data.*

- Appendix B contains helicopter/rotorcraft data
- Appendix C contains homebuilt/experimental aircraft data

There are three weight classes for aircraft:

- Small
- Large
- Heavy

Generally, the greater the aircraft weight, the greater the effect of its wake turbulence.

*NOTE: Many small weight class aircraft are listed as "S+" (spoken "small plus") in the 7110.65 Appendix A. This denotes aircraft weighing between 12,500 lbs and 41,000 lbs. For Class B Airspace rules, these aircraft are "large, turbine-engine powered aircraft."*

JO 7110.65, App. A





## Aircraft Designators

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### Aircraft Designators

Aircraft designators are approved, shortened versions of the aircraft manufacturer's designation.

- Used on flight progress strips and for ATC communications

*NOTE: Flight progress strips are covered in another lesson.*

In general, the first character(s) in a civilian aircraft type denotes the manufacturer; for example, the BE in BE55 means Beech Aircraft Company.

An aircraft designator may contain as many as four characters, but no less than two characters.

Designator characters may be all letters or a combination of letters and numbers.

- First character must be a letter.

In the past, each country established its own designators for civil aircraft. This is now controlled by International Civil Aviation Organization (ICAO) for standardization.

ATG-2, Chap. 1; JO 7110.65, App. A





# Aircraft Designators

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## Examples of Civil Designators

JO 7110.65, App. A

Model Name	Designator
COMMANDER	AC68
SUPER KING AIR	BE20
BARON 58	BE58
SKYHAWK	C172
CITATION	C550
(CHEROKEE) ARCHER	P28A
GULFSTREAM	GLF3
BOEING 737-300	B733
MD11	MD11
BELL 222	B222



# Aircraft Designators

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## Examples of Military Designators

Military designators begin with a letter that identifies the aircraft's mission or tactical status.

JO 7110.65, App. A

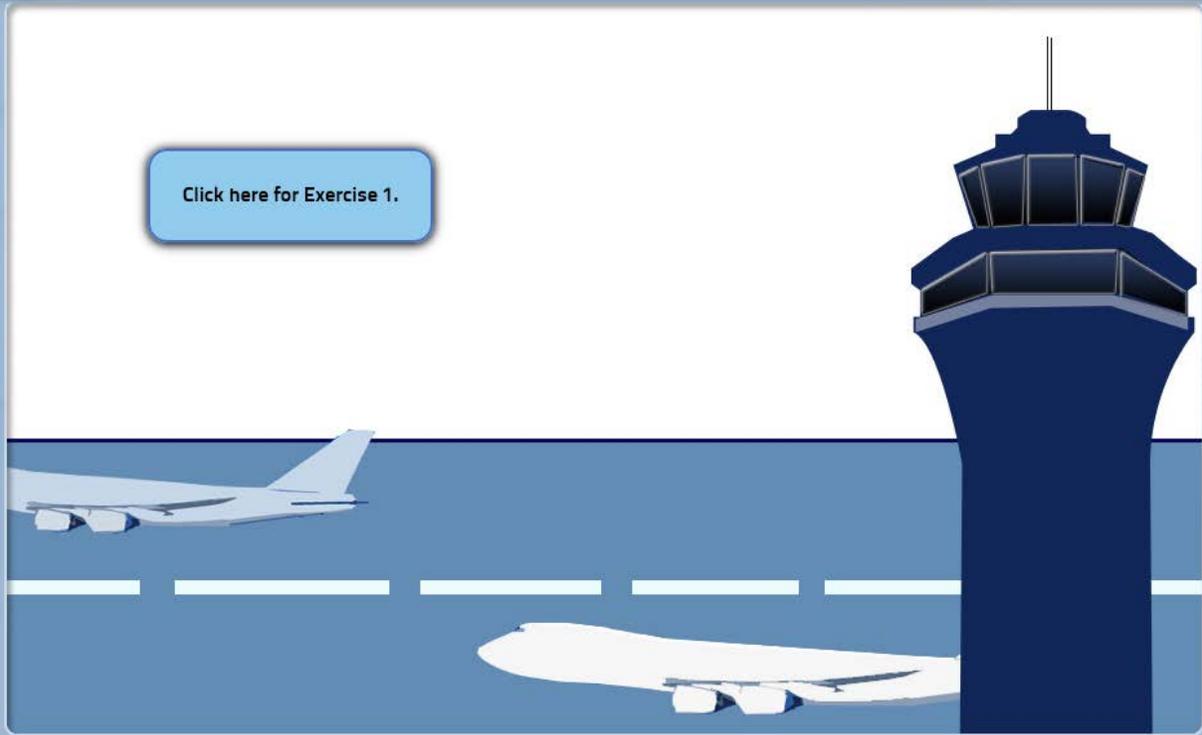


## Exercise 1: Aircraft Categories/ Performance Characteristics

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[Click here for Exercise 1.](#)





## Aircraft Identification Features

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### Aircraft Identification Features

1. Size
2. Engine location and number
3. Engine type
4. Wing placement
5. Wing configuration
6. Tail configuration
7. Windows
8. Fuselage shape
9. Landing gear

### Identification Features

Correct identification or recognition of an aircraft's features is important for the following reasons:

- To be aware of its performance capabilities
- To apply separation
- For visual separation

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## Aircraft Identification Features

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Boeing  
B767



Boeing  
B737



### Size

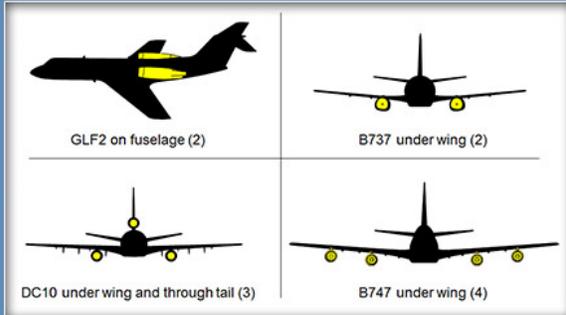
Size may distinguish the difference between two aircraft that appear similar.



# Aircraft Identification Features

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## Engine Location and Number

An aircraft's engine location will vary with size, design, and operational requirements.

Engine locations can be found:

- On, under, or through the wings
- On or through the vertical stabilizer
- On the fuselage

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# Aircraft Identification Features

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## Engine Types

A reciprocating engine (piston-engine) is found mostly on single-engine or light twin-engine aircraft and operates a propeller.

- Engine is similar to a car engine
- Operates at around 60 to 350 horsepower
- Normally the slowest of the three engine types

Examples: C172, BE58, P28R

A turboprop engine is essentially a small turbojet engine which operates a propeller.

- Found on many Category II aircraft
  - Small
- or
- Large weight class
- Turbine-engine creates:
  - Greater horsepower
  - Faster speeds
  - Better performance

Examples: PAY1, BE20, E120

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## Three Basic Aircraft Engine Types

Reciprocating

C421  
Golden Eagle



Turboprop

BE20  
Super King Air



Turbojet

C550  
Citation II





## Aircraft Identification Features

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### Engine Types

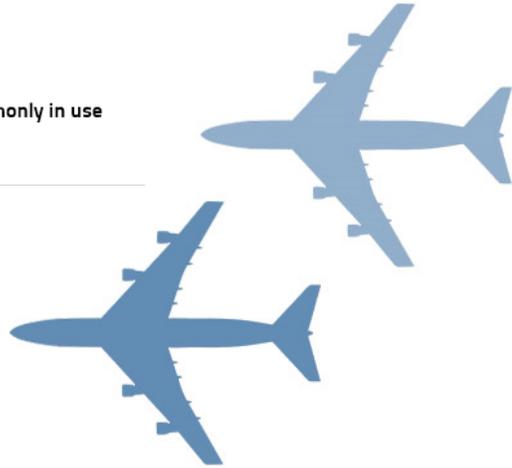
A turbojet engine is commonly referred to as a "jet" engine and has no propeller.

All jets are Category III aircraft:

- Found in all weight classes
- Derive power from thrust or exhaust gases
- Currently the highest performance aviation engine commonly in use

Examples: B767, DC10, LR35, F16

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# Aircraft Identification Features

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## Wing Placement

There are three basic wing placements:

- **High-wing**
  - Located on top of fuselage
- **Mid-wing**
  - Mounted in the center or middle of fuselage
- **Low-wing**
  - Located on the underside or beneath the fuselage

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High-Wing

*Cessna Skyhawk C172*



Mid-Wing

*Fighting Falcon F-16*



Low-Wing

*Cherokee Arrow P28R*





## Aircraft Identification Features

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### Wing Placement

Majority of aircraft are either high-wing or low-wing.

Other types of wing placement:

- Bi-wing (bi-plane) which, in the past, was popular, but is not very common today.
- Canard, found primarily on experimental aircraft, consists of an additional wing-like lifting surface located ahead of the cockpit near the nose of the aircraft.

Wing placement is not limited to aircraft categories or weight classes.





## Aircraft Identification Features

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### Straight-Wing Configuration Piper Saratoga PA32



### Wing Configurations

Each aircraft has a particular wing configuration (design) that is specifically created for its operational needs.

There are three basic wing configurations:

- Straight-wing
- Swept-wing
- Delta-wing

Wing configuration is not limited to an aircraft category or a weight class.

Wings can be configured on aircraft as follows:

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## Aircraft Identification Features

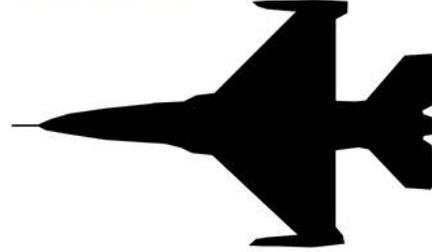
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**Swept-Wing Configuration**  
DC-10



**Delta-Wing Configuration**  
Fighting Falcon F16



### Wing Configurations

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## Aircraft Identification Features

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### Tail Configurations

Tail configuration is also known as the "empennage," which is made up of two main components:

- Vertical stabilizer
- Horizontal stabilizer

There are six basic tail configurations:

- Conventional tail
- Forward slant vertical stabilizer
- Horizontal stabilizer above fuselage
- "T" tail - swept or straight
- "V" tail
- "Twin Boom" tail

Tail configuration is not limited to an aircraft category or a weight class.

Tails can be configured on aircraft as follows:

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### Conventional Tail Piper Saratoga-PA32





# Aircraft Identification Features

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**Forward Slant Vertical Stabilizer**  
Mooney Mark 21-M20P



**Horizontal Stabilizer Above Fuselage (Mid-Tail)**

Dassault-Breguet Mystere/Falcon 20-FA20



**"T" Tail**  
Beech Super King Air 200-BE20



## Tail Configurations

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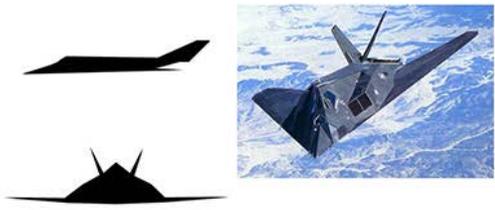


# Aircraft Identification Features

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**“V” Tail**  
Stealth Fighter-F117



**Twin Boom Tail**  
Cessna Super Skymaster 337-C337



## Tail Configurations

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# Aircraft Identification Features

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## Windows

In some cases, different aircraft can look very much alike. Windows may be the distinguishing factor that set like aircraft apart.

Windows come in different shapes and sizes:

ATG-2, p. 1-8

### Oval



### Round



### Teardrop





# Aircraft Identification Features

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## Square



### Windows

Things to look for in windows are:

- The number - How many windows are there?
  - Four windows vs. six windows
- The arrangement
  - Are they located aft of the door or half in front and half aft?
- The alignment
  - Are they all level or are some off-center or staggered?
- Is the windshield sectioned or is it wrapped around?

ATG-2, p. 1-8



## Aircraft Identification Features

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### Fuselage

There are three factors that contribute to the shape of fuselages.

- Aircraft's design function
  - The function for transporting passengers or cargo will require a larger fuselage than that of, say, a fighter aircraft.
- Type of power plant or engine used
  - Turboprop and jet engines can achieve altitudes that require pressurization. This will influence the fuselage shape.
- Materials used
  - The characteristics of materials such as wood/fiber, aluminum, or composites will affect the fuselage shape.

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## Aircraft Identification Features

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### Landing Gear

There are two basic types of landing gear:

- Tricycle
- Conventional

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## Aircraft Identification Features

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### Tricycle Gear

Consists of main left and right landing gear located aft of the aircraft's center of gravity.

One forward nose gear is located forward of the aircraft's center of gravity.

- This is the most common type of gear found on today's aircraft.

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### Tricycle Landing Gear Cessna 150





## Aircraft Identification Features

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### Conventional Landing Gear

Cessna 170



#### Conventional Gear

Conventional gear is often referred to as 'tail draggers.'

Consists of main left and right landing gear located toward the front of the aircraft, forward of the center of gravity.

One tail wheel is located toward far aft of the aircraft.



# Aircraft Identification Features

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## Landing Gear Configuration

Landing gear configuration may be either:

- Fixed
- Retractable

**Fixed gears** are the landing gears that hang permanently below the aircraft and are not moveable.

**Retractable gears** are landing gears that retract into the fuselage for storage during flight.

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## Fixed Gear



CESSNA 150



PIPER ARCHER PA28

## Retractable Gear



BOEING 777



BE35



# Aircraft Recognition

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## Bubble Canopy



### Selected Aircraft

The selected aircraft on the following pages include those that are common to the ATC training program.

*NOTE: The aircraft shown on the following pages is not an exhaustive list, but is a representative sample of the aircraft used in the ATC training program. You will be required to recognize and identify the aircraft by name and designator.*

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# Aircraft Recognition

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## CAT I Single Engine Propeller Aircraft

Skyhawk, Cutlass, Mescalero

- **Manufacturer:** Cessna Aircraft Company
- **Name:** Skyhawk, Cutlass, Mescalero
- **Designator:** C172

- **Recognition features:**
  - High/straight-wing
  - Conventional tail
  - Single-engine (prop)
  - Small weight class

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# Aircraft Recognition

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**P28A**



## CAT I Single Engine Propeller Aircraft

### Cherokee

- **Manufacturer:** Piper Aircraft Corporation
- **Name:** Warrior (Other versions of the Cherokee include Arrow, and Archer)
- **Designation:** P28A
  
- **Recognition features:**
  - Low/straight wing
  - Conventional tail
  - Single-engine (prop)
  - Small weight class

*NOTE: The Arrow has a retractable landing gear. The fixed-gear version is a Warrior or Archer.*

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# Aircraft Recognition

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## CAT I Single Engine Propeller Aircraft

Caravan, Cargomaster, Grand Caravan

- **Manufacturer:** Cessna Aircraft Company
- **Name:** Caravan
- **Designator:** C208
  
- **Recognition features:**
  - High wing, conventional tail
  - Turbo-prop
  - Cargo pod under fuselage
  - Small weight class

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# Aircraft Recognition

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**C210**



## CATEGORY 1 Single Engine Propeller Aircraft

### Centurion

- Manufacturer: Cessna Aircraft Company
- Name: Centurion
- Designator: C210
  
- Recognition features:
  - High wing
  - No struts
  - Conventional tail
  - Retractable gear
  - Small weight class

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# Aircraft Recognition

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## CATEGORY 1 Single Engine Propeller Aircraft

### Tomahawk

- **Manufacturer:** Piper Aircraft Corporation
- **Name:** Tomahawk
- **Designator:** PA38
  
- **Recognition features:**
  - Low straight wing
  - "T" tail configuration
  - Single engine (prop)
  - Small weight class





# Aircraft Recognition

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**BE35**



## CATEGORY 1 Single Engine Propeller Aircraft

### Bonanza

- Manufacturer: Beech Aircraft Company
- Name: Bonanza 35
- Designator: BE35
  
- Recognition features:
  - Low straight wing
  - "V" Tail
  - Single Engine (prop)
  - Small weight class



# Aircraft Recognition

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## CATEGORY 1 Helicopters

Bell 206, Jet Ranger, Long Ranger

- Manufacturer: Bell Helicopter Textron
- Name: Bell 206, Jet Ranger, Long Ranger
- Designator: B06

- Recognition features:
  - Helicopter
  - Fixed skid rail gear
  - Single turbo-shaft engine, single rotor
  - Small weight class

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B06





# Aircraft Recognition

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## B222



### CATEGORY 1 Helicopters

#### Bell 222

- **Manufacturer:** Bell Helicopter Textron
- **Name:** Bell 222
- **Designator:** B222
  
- **Recognition features:**
  - Helicopter
  - Fixed skid rail gear
  - Twin Turbo-shaft, single rotor
  - Small weight class

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# Aircraft Recognition

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## CATEGORY 2 Twin-Engine Propeller Reciprocating

### Baron

- **Manufacturer:** Beech Aircraft Company
- **Name:** Baron
- **Designator:** BE58
  
- **Recognition features:**
  - Low/straight-wing
  - Conventional tail
  - Twin-engine (prop)
  - Small weight class



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# Aircraft Recognition

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**PA34**



## CATEGORY 2 Twin-Engine Propeller Reciprocating

Seneca

- **Manufacturer:** Piper Aircraft Corp.
- **Name:** Seneca
- **Designator:** PA34
  
- **Recognition features:**
  - Low/straight wing
  - Conventional tail
  - Twin-engine (prop)
  - Small weight class
  - Stabilator

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# Aircraft Recognition

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## CATEGORY 2 Twin-Engine Propeller Reciprocating

Twin Cessna

- **Manufacturer:** Cessna Aircraft Company
- **Name:** Twin Cessna
- **Designator:** C310
  
- **Recognition features:**
  - Low/straight-wing with tip tanks
  - Conventional tail
  - Twin-engine (prop)
  - Small weight class

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C310





# Aircraft Recognition

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**C421**



**CATEGORY 2 Twin-Engine Propeller Reciprocating**

**Golden Eagle**

- **Manufacturer:** Cessna Aircraft Company
- **Name:** Golden Eagle
- **Designator:** C421
  
- **Recognition features:**
  - **Low/straight-wing**
  - **Conventional tail**
  - **Twin-engine (prop)**
  - **Small weight class**

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# Aircraft Recognition

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## CATEGORY 2 Twin-Engine Turboprop

### Cheyenne

- **Manufacturer:** Piper Aircraft Corporation
- **Name:** Cheyenne
- **Designator:** PAY1
  
- **Recognition features:**
  - Low/straight-wing (with wingtip gas tanks)
  - Conventional tail
  - Twin-engine (turboprop)
  - Small weight class

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PAY1





# Aircraft Recognition

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**BE20**



## CATEGORY 3 Twin-Engine Turboprop

### Super King Air

- **Manufacturer:** Beech Corp.
- **Name:** Super King Air
- **Designator:** BE20
  
- **Recognition features:**
  - Low wing
  - "T" tail
  - Twin-engine (turboprop)
  - Small weight class

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# Aircraft Recognition

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## CATEGORY 3 (CORPORATE JETS) Twin-Engine Turbojet - Smaller

### Learjet

- **Manufacturer:** Bombardier Corporation
- **Name:** Learjet
- **Designator:** LJ35
  
- **Recognition features:**
  - Low swept-wing with tip tanks
  - Distinctive windshield
  - "T" tail
  - Two jet engines (aft fuselage)
  - Small weight class

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# Aircraft Recognition

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## FA20



### CATEGORY 3 (CORPORATE JETS) Twin-Engine Turbojet - Smaller

Falcon, Mystere

- **Manufacturer:** Dassault – Breguet
- **Name:** Falcon, Mystere
- **Designator:** FA20
  
- **Recognition features:**
  - Low/swept-wing
  - Horizontal stabilizer above the fuselage (mid-tail)
  - Two jet engines (aft fuselage)
  - Small weight class

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# Aircraft Recognition

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## CATEGORY 3 (CORPORATE JETS) Twin-Engine Turbojet - Smaller

### Beechjet

- Manufacturer: Beech Aircraft Company
- Name: Beechjet
- Designator: BE40
  
- Recognition features:
  - Low/swept-wing
  - Swept back "T" tail
  - Engines on fuselage
  - Small weight class

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# Aircraft Recognition

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**C550**



**CATEGORY 3 (CORPORATE JETS) Twin-Engine Turbojet - Smaller**

Citation

- **Manufacturer:** Cessna Aircraft Company
- **Name:** Citation
- **Designator:** C550
  
- **Recognition features:**
  - Low straight wing
  - Conventional tail
  - Rounded nose
  - Small weight class

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# Aircraft Recognition

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## CATEGORY 3 (CORPORATE JETS) Twin-Engine Turbojet - Larger

Citation X (10)

- **Manufacturer:** Cessna Aircraft Company
- **Name:** Citation X (10)
- **Designator:** C750
  
- **Recognition features:**
  - Low/swept-wing
  - "T" - tail
  - Two jet engines (aft fuselage)
  - Small weight class

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**C750**





# Aircraft Recognition

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## GLF3



### CATEGORY 3 (CORPORATE JETS) Twin-Engine Turbojet - Larger

#### Gulfstream

- **Manufacturer:** Gulfstream Aerospace
- **Name:** Gulfstream
- **Designator:** GLF3
  
- **Recognition features:**
  - Low/swept-wing with winglets
  - "T" tail
  - Two jet engines (aft fuselage)
  - Large weight class

*NOTE: The upturned wingtips are referred to as "winglets." Winglets are common on many newer aircraft because they make the wing more efficient and provide additional lift.*

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# Aircraft Recognition

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## CATEGORY 3 (CORPORATE JETS) Twin-Engine Turbojet - Larger

### Challenger

- **Manufacturer:** Canadair Bombardier (Canada)
- **Name:** Challenger
- **Designator:** CL60
  
- **Recognition features:**
  - Low/swept-wings with winglets
  - "T" tail
  - Engines mounted high on side of fuselage
  - Large weight class

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CL60





# Aircraft Recognition

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NEXT

## CRJ1, CRJ2, CRJ7, CRJ9



### CATEGORY 3 (AIR CARRIER) 2-Engine Turbojet

Canadair Regional Jet (CRJ)

- Manufacturer: Canadair Bombardier
- Name: Regional Jet
- Designator: CRJ1, CRJ2, CRJ7, CRJ9
  
- Recognition features:
  - Low/swept-wing with winglets
  - "T" tail
  - Two jet engines (aft fuselage)
  - Large weight class

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# Aircraft Recognition

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**CATEGORY 3 (AIR CARRIER) 2-Engine Turbojet**

**Embraer Regional Jet (ERJ)**

- **Manufacturer:** Embraer
- **Name:** Regional Jet
- **Designator:** E135, E145
  
- **Recognition features:**
  - **Low/swept-wing**
  - **"T" tail**
  - **Two jet engines (aft fuselage)**
  - **Large weight class**

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**E135/145**





# Aircraft Recognition

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**E170**



**CATEGORY 3 (AIR CARRIER) 2-Engine Turbojet**

**Embraer 170/175**

- **Manufacturer:** Embraer
- **Name:** Embraer 170/175
- **Designator:** E170
  
- **Recognition features:**
  - **Low/swept-wing with winglets**
  - **Conventional tail**
  - **Two jet engines under wings**
  - **Large weight class**

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# Aircraft Recognition

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## CATEGORY 3 (AIR CARRIER) 2-Engine Turbojet

- **Manufacturer:** McDonnell-Douglas Corporation
- **Name:** MD80
- **Designator:** MD81, MD82, MD83, MD87, MD88
  
- **Recognition features:**
  - Low swept-wing
  - "T" tail
  - Two jet engines (aft fuselage)
  - Large weight class

ATG-2MD80

### MD81, MD82, MD83, MD87, MD88





# Aircraft Recognition

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## B731 through B739



### CATEGORY 3 (AIR CARRIER) 2-Engine Turbojet

#### Boeing 737

- Manufacturer: Boeing Corporation
- Name: Boeing 737
- Designator: B731 through B739
  
- Recognition features:
  - Low/swept-wing
  - Conventional tail
  - Two jet engines under wings
  - Large weight class

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# Aircraft Recognition

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## CATEGORY 3 (AIR CARRIER) 2-Engine Turbojet

Airbus 318 through 321

- **Manufacturer:** Airbus
- **Name:** Airbus 318 through 321
- **Designator:** A318 through A321
  
- **Recognition features:**
  - Low/swept-wing with winglets
  - Conventional tail
  - Two jet engines under wings
  - Large weight class

ATG-2





# Aircraft Recognition

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**A306**



**CATEGORY 3 (AIR CARRIER) 2-Engine Turbojet**

**Airbus 300**

- **Manufacturer:** Airbus (International)
- **Name:** Airbus 300
- **Designator:** A306
  
- **Recognition features:**
  - Low swept wings
  - Large thick body
  - Two large engines under wings
  - Heavy weight class

ATG-2



# Aircraft Recognition

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**CATEGORY 3 (AIR CARRIER) 2-Engine Turbojet**

**Boeing 757**

- **Manufacturer:** Boeing Corporation
- **Name:** Boeing 757 -200,300
- **Designator:** B752/B753
  
- **Recognition features:**
  - Low/swept-wing
  - Conventional tail
  - Two jet engines under wings
  - Large weight class

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**B752, B753**





# Aircraft Recognition

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## B762, B763, B764



### CATEGORY 3 (AIR CARRIER) 2-Engine Turbojet

#### Boeing 767

- Manufacturer: Boeing Corporation
- Name: Boeing 767 -200, -300, -400
- Designator: B762/B763/B764
  
- Recognition features:
  - Low/swept-wing
  - Conventional tail
  - Two jet engines, on wings
  - Heavy weight class

ATG-2



# Aircraft Recognition

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## CATEGORY 3 (AIR CARRIER) 2-Engine Turbojet

### Boeing 777

- **Manufacturer:** Boeing Corporation
- **Name:** Boeing 777 – 200, 300
- **Designator:** B772/B773
  
- **Recognition features:**
  - Low/swept-wing
  - Conventional tail
  - Two jet engines under wings
  - Heavy weight class

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**B772, B773**





# Aircraft Recognition

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**B721, B722**



## CATEGORY 3 (AIR CARRIER) 3-Engine Turbojet

Boeing 727

- **Manufacturer:** Boeing Aircraft Corporation
- **Name:** Boeing 727
- **Designator:** B721/B722
  
- **Recognition features:**
  - Low swept-wing
  - "T"-tail
  - Three jet engines (two aft fuselage and one through the tail)
  - Large weight class

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# Aircraft Recognition

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**CATEGORY 3 (AIR CARRIER) 3-Engine Turbojet**

**MD11**

- **Manufacturer:** McDonnell-Douglas Corporation
- **Name:** MD11
- **Designator:** MD11
  
- **Recognition features:**
  - Low swept-wing with winglets
  - Conventional tail
  - Three jet engines (two on wing, one above fuselage through tail)
  - Heavy weight class



ATG-2



# Aircraft Recognition

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## B741 through B744



### CATEGORY 3 (AIR CARRIER) 4-Engine Turbojet

#### Boeing 747

- Manufacturer: Boeing Corporation
- Name: Boeing 747
- Designator: B741 through B744
  
- Recognition features:
  - Low/swept-wing
  - Conventional tail
  - Four jet engines under wings
  - Forward fuselage higher than rear
  - Heavy weight class

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# Aircraft Recognition

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## CATEGORY 3 (AIR CARRIER) 4-Engine Turbojet

A380-800

- **Manufacturer:** Airbus Industries
- **Name:** Airbus 380
- **Designator:** A388
  
- **Recognition features:**
  - Low swept-wing
  - Conventional-tail
  - Four jet engines under wings
  - "Super" Heavy weight class
  - Double decks

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# Aircraft Recognition

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**C130**



## CAT III 4-Engine Turboprop

### Hercules

- **Manufacturer:** Lockheed Aircraft Corporation
- **Name:** Hercules
- **Designator:** C130
  
- **Recognition features:**
  - High-wing
  - Conventional tail
  - Four turboprop engines on wings
  - Large weight class

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# Aircraft Recognition

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## CAT III 4-Engine Turbojet

### Globemaster 3

- **Manufacturer:** McDonnell-Douglas Corporation
- **Name:** Globemaster
- **Designator:** C17
  
- **Recognition features:**
  - High-wing
  - "T" tail
  - Four jet engines under wings
  - Heavy weight class

*NOTE: Note the protrusions extending from the trailing edge of the wings.*

ATG-2

C17





# Aircraft Recognition

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**F16**



## CATEGORY 3 (FIGHTER) Turbojet

### Fighting Falcon

- **Manufacturer:** General Dynamics
- **Name:** Fighting Falcon
- **Designator:** F16
  
- **Recognition features:**
  - Mid/Delta-wing
  - Conventional tail
  - Single jet engine (in the tail)
  - Large weight class

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# Aircraft Recognition

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## CATEGORY 3 (FIGHTER) Turbojet

### Eagle

- **Manufacturer:** McDonnell Douglas
- **Name:** Eagle
- **Designator:** F15
  
- **Recognition features:**
  - Mid/Delta-wing
  - Twin tail
  - Twin jet engine (between the vertical stabilizers)
  - Large weight class

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F15





# Aircraft Recognition

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**F18**



## CATEGORY 3 (FIGHTER) Turbojet

### Super Hornet

- **Manufacturer:** McDonnell Douglas
- **Name:** Super Hornet
- **Designator:** F18
  
- **Recognition features:**
  - Mid/Delta-wing
  - Twin "modified V" tail
  - Twin jet engine (between the vertical stabilizers)
  - Large weight class

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# Aircraft Recognition

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## CATEGORY 3 (FIGHTER) Turbojet

### Raptor

- **Manufacturer:** Lockheed
- **Name:** Raptor
- **Designator:** F22
  
- **Recognition features:**
  - Mid/Delta-wing
  - Twin modified "V" tail
  - Large square intakes
  - Twin jet engine
  - Large weight class

ATG-2

F22





# Aircraft Recognition

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## CATEGORY 3 Military 3 Engine Turbojet

### KC10 Extender

- **Manufacturer:** McDonnell Douglas
- **Name:** Extender
- **Designator:** KC10
  
- **Recognition features:**
  - Low swept-wing
  - Conventional tail
  - Three jet engines (two on wing, one above fuselage through tail)
  - Heavy weight class

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## Aircraft Recognition at a Glance

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[Click here to access all the Appendices for Lesson 14.](#)

